

AMENDMENTS TO THE CLAIMS

1. - 34. (Canceled)

35. (New) A differentiated cell population as part of a system for generating glial cells, wherein at least ~80% of cells in the differentiated cell population are oligodendrocyte precursors having the following characteristics:

- they are progeny of primate pluripotent stem (pPS) cells;
- they stain with antibody specific for NG2 proteoglycan; and
- they are negative for the neuronal marker NeuN;

and wherein the system further comprises the line of pPS cells from which the differentiated cells were produced.

36. (New) The differentiated cell population according to claim 35, wherein at least 80% of the cells also express A2B5.

37. (New) The differentiated cell population according to claim 35, wherein at least 80% of the cells also express platelet-derived growth factor receptor- α (PDGFR α).

38. (New) The differentiated cell population according to claim 35, wherein at least 20% of the cells show a bipolar morphology characteristic of oligodendrocyte precursors.

39. (New) The differentiated cell population according to claim 35, wherein culturing of the population for 3 days on poly-L-lysine and laminin in the absence of mitogens produces cells that express galactocerebroside (GalC).

40. (New) The differentiated cell population according to claim 35, wherein after culturing of the population for 3 days on poly-L-lysine and laminin in the absence of mitogens, at least 10% of the cells have complex processes characteristic of mature oligodendrocytes.

41. **(New)** The differentiated cell population according to claim 35, wherein implantation of the population into the spinal cord of a shiverer mutant mouse causes deposition of compact myelin around neuronal axons.

42. **(New)** The differentiated cell population according to claim 35, wherein implantation of the population in or around a contusion injury in the spinal cord of a rat causes improvement in overground locomotion.

43. **(New)** The differentiated cell population according to claim 35, obtained by a process in which the undifferentiated pPS cells are cultured in a medium containing a mitogen and at least two oligodendrocyte differentiation factors.

44. **(New)** The differentiated cell population according to claim 43, obtained by a process in which the undifferentiated pPS cells are cultured in a medium containing fibroblast growth factor (FGF), thyroid hormone, and retinoic acid.

45. **(New)** The differentiated cell population according to claim 35, obtained by a process in which glial cells are separated from non-glial cells.

46. **(New)** The differentiated cell population according to claim 35, wherein the pPS cells are human embryonic stem (hES) cells.

47. **(New)** A differentiated cell population as part of a system for generating glial cells, wherein at least ~80% of cells in the differentiated cell population are oligodendrocyte precursors having the following characteristics:

- they are progeny of primate pluripotent stem (pPS) cells;
- they are positive for the transcription factor Olig1; and
- they are negative for the neuronal marker NeuN;

and wherein the system further comprises the line of pPS cells from which the differentiated cells were produced.

48. (New) The differentiated cell population according to claim 47, wherein at least 80% of the cells also express A2B5.
49. (New) The differentiated cell population according to claim 47, wherein at least 80% of the cells also express platelet-derived growth factor receptor- α (PDGFR α).
50. (New) The differentiated cell population according to claim 47, wherein at least 20% of the cells show a bipolar morphology characteristic of oligodendrocyte precursors.
51. (New) The differentiated cell population according to claim 47, wherein culturing of the population for 3 days on poly-L-lysine and laminin in the absence of mitogens produces cells that express galactocerebroside (GalC).
52. (New) The differentiated cell population according to claim 47, wherein after culturing of the population for 3 days on poly-L-lysine and laminin in the absence of mitogens, at least 10% of the cells have complex processes characteristic of mature oligodendrocytes.
53. (New) The differentiated cell population according to claim 47, wherein implantation of the population into the spinal cord of a shiverer mutant mouse causes deposition of compact myelin around neuronal axons.
54. (New) The differentiated cell population according to claim 47, wherein implantation of the population in or around a contusion injury in the spinal cord of a rat causes improvement in overground locomotion.
55. (New) The differentiated cell population according to claim 47, obtained by a process in which the undifferentiated pPS cells are cultured in a medium containing a mitogen and at least two oligodendrocyte differentiation factors.

56. **(New)** The differentiated cell population according to claim 55, obtained by a process in which the undifferentiated pPS cells are cultured in a medium containing fibroblast growth factor (FGF), thyroid hormone, and retinoic acid.

57. **(New)** The differentiated cell population according to claim 47, obtained by a process in which glial cells are separated from non-glial cells.

58. **(New)** The differentiated cell population according to claim 47, wherein the pPS cells are human embryonic stem (hES) cells.